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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/918,439	08/01/2001	Hideki Kato	110287	4747

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EXAMINER

BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 02/05/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

AS4

Office Action Summary	Application No. 09/918,439	Applicant(s) KATO ET AL.	
	Examiner Kevin M Bernatz	Art Unit 1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☒ Claim(s) 1-3 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Examiner's Comments

1. The examiner notes that the index of refraction (claim 2) is a function of wavelength and has interpreted the claim in the broadest reasonable interpretation that the claimed value can be met at any measurement wavelength (see Inoue et al. (U.S. Patent Application Publication 2001/0048643 A1, Paragraphs 0102 and 0107).
2. The examiner further notes the claimed language "regular in thickness" has been given its broadest reasonable interpretation in view of the specification and has been interpreted to simply require that each layer not vary in thickness along its axis (within art recognized tolerance and surface roughness).
3. The language of claim 1 is slightly convoluted and applicants should consider rewording the claim to remove any extra verbiage. One possible alternative would be: "... comprising: two dielectric multilayered films and a magnetic film provided between the two dielectric multilayered films, wherein the two dielectric multilayered films comprise two types of dielectric films alternatively laminated with each other regular in thickness and wherein the two types of dielectric films have different optical characteristics from each other and different refractive index values from each other".

Drawings

4. The corrected or substitute drawings were received on August 20, 2001. These drawings are accepted.

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5. The drawings are objected to because Figure 2 has the x-axis labels inverted. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1 – 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "thin" in claims 1 (lines 3, 5 and 8), 2 and 3 is a relative term which renders the claim indefinite. The term "thin" is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Specifically, it is unclear where the demarcation between "thin" and "thick" is drawn, so that one of ordinary skill in the art would not be able to determine if, for example, a 300 nm, 700 nm or 1000 nm film would be covered by the claimed language (i.e. what applicants consider as "thin" may not be what someone else considers as "thin").

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Saito et al. (E.P. Patent No. 239390 A2).

Regarding claim 1, Saito et al. disclose a magneto-optical body comprising two dielectric multilayered films (*Figure 2, elements 13a, 13b, 14a and 14b*) and a magnetic film (*element 12*) provided between the two dielectric multilayered films, wherein the two dielectric multilayered films comprise two types of dielectric films alternatively laminated with each other (*Table 1*) regular in thickness (*page 4, lines 23 – 26 and see Paragraph 2, above*) and wherein the two types of dielectric films have different optical characteristics from each other and different refractive index values from each other (*Table 1 – e.g. silicon oxide has a refractive index of ~1.54 and silicon carbide has a refractive index of ~2.65*).

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10. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Inoue et al. ('643 A1).

Regarding claim 1, Inoue et al. disclose a magneto-optical body comprising two dielectric multilayered films (*Figure 13, elements 13*) and a magnetic film (*element 14*) provided between the two dielectric multilayered films, wherein the two dielectric multilayered films comprise two types of dielectric films alternatively laminated with each other (*elements 22 and 23*) regular in thickness (*Paragraphs 0011 and 0090*) and wherein the two types of dielectric films have different optical characteristics from each other and different refractive index values from each other (*Paragraphs 0102 and 0107–e.g. SiO₂ has a refractive index of ~1.59 and TiO₂ has a refractive index of ~2.44 – 2.70*).

Regarding claim 4, Inoue et al. disclose optical isolators meeting applicants' claimed limitations (*Figures and Paragraphs 0004*).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. as applied above, and further in view of Li (U.S. Patent No. 6,487,014 B2).

Inoue et al. is relied upon as described above.

Inoue et al. fail to disclose dielectric layers meeting applicants' claimed limitations.

However, Li teach optical isolators wherein a stacked film of high and low refractive index material are used in order to produce a thin film polarizing device which employs frustrated total internal reflection and interference to transmit s-polarized light and to reflect p-polarized light, thereby reducing insertion loss and allowing the devices to be polarization independent (*Table 1; Figure 1; col. 3, lines 58 – 67; col. 4, lines 44 – 46; col. 5, lines 63 – 66 and col. 12, lines 43 – 48*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Inoue et al. to use a stacked film of high and low refractive index material as taught by Li in order to produce a thin film polarizing device which employs frustrated total internal reflection and interference to transmit s-polarized light and to reflect p-polarized light, thereby reducing insertion loss and allowing the devices to be polarization independent.

Regarding claims 2 and 3, Li discloses stacked "high and low" refractive index films meeting applicants' claimed limitations (*where Si has a refractive index of ~3.49 and SiO₂ has a refractive index of ~1.59*).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakamura et al. (IEEE Trans. Mag., 21(5), 1985) teach that Si

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films are known to enhance the Kerr rotation of magneto-optical layers deposited on/near them (*Abstract and Introduction*).

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (703) 308-1737. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.



KMB
January 28, 2003



Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700